

Also inside: Renaissance Lessons for Modern CIOs 34
An H-1B Loophole May Help a Utility Outsource IT Jobs 7

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Michigan's IT Power Team

A group of savvy CIOs from a wide range of industries share ideas and promote tech innovation in their state.

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Heads up



PROCESSORS

Intel Casts Its Lot With Android in The Tablet Market

In case it wasn't clear already, Intel and Microsoft are no longer joined at the hip. Intel is trying desperately to expand its share of the tablet market, and with Windows flunking out on those devices, Android is where it's at.

Intel hopes to see its processors used in 40 million tablets this year, and 80% to 90% of those devices will run Google's Android operating system, Intel CEO Brian Krzanich said during a recent quarterly earnings call. "Our mix of OSs reflects pretty much what you see in the marketplace," he said.

Most Intel-powered tablets running Android today use older Medfield and Clover Trail+ chips. New Android tablets running the latest Atom processor, called Bay Trail, will ship later this quarter.

That's not to say Intel is abandoning Windows. The company expects Windows to "grow and gain traction" in the tablet market, said Krzanich, noting that new Intel-based tablets running both Android and Windows will be shown in June at the Computex trade show in Taipei.

The first Android-based Bay Trail tablet, the DreamLab, was announced in January, but it hasn't shipped yet.

Intel is providing discounts and development funds to tablet makers to reduce the cost of using its chips.

- AGAM SHAH,

IDG NEWS SERVICE

IT CAREERS

Bachelor's Degree Not Needed in Tech

BILL GATES, Steve Jobs and Edward Snowden all launched tech careers without four-year college degrees, and that may be true for many more IT professionals.

A study of New York's IT workforce by HR&A Advisors found that 44% of jobs in the city's "tech ecosystem," or 128,000 jobs, are "accessible" to people without a bachelor's degree.

One such job is user support specialist. According to the study, that job just requires an associate degree and it pays \$28.80 an hour.

Other tech occupations that don't require four-year degrees include customer service representative, which pays an average of \$18.50 an hour, telecommunications line installer, with average pay of \$37.60 an hour, and sales representative, which commands \$33.60 an hour. People in those roles can generally learn

the ropes through on-the-job training.

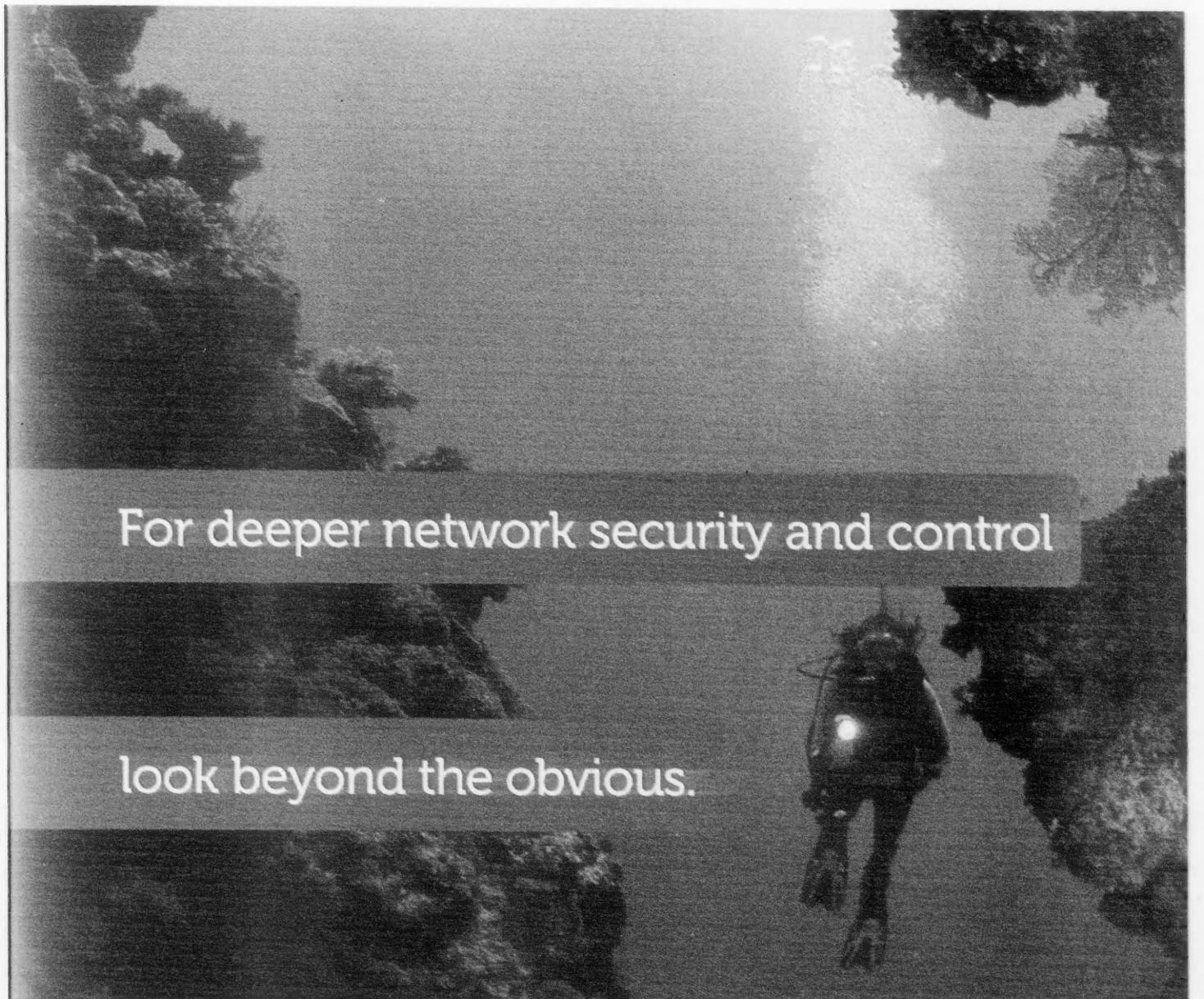
About 75% of the 25 employees at New York Computer Help have bachelor's degrees, according to Joe Silverman, who owns the Manhattan-based repair and IT services firm.

Silverman said he looks for experience first, and tends to hire people with at least 15 years in the business — enough to handle any type of customer problem. While he acknowledges that many of his employees have four- or two-year degrees, he said he doesn't believe one is critical. "Experience plus direct certifications speaks higher than just the typical general degree," he said.

People who work in New York's tech ecosystem earn 49% more in hourly wages than the average worker in the city.

- Patrick Thibodeau

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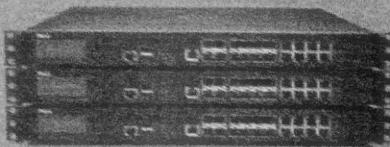
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HEADS UP

BETWEEN THE LINES

By John Klossner



HARDWARE

Microsoft Backtracks on Chromebooks

MICROSOFT HAS CONCEDED that Google's Chrome OS and Chromebooks can indeed do real work, a reversal of the viewpoint it trumpeted in its "Scroogled" campaign, which blasted the laptops as worthless.

Microsoft recently announced that it will offer its free Office Online apps — Word, Excel, PowerPoint and OneNote — to Google's Chrome Web Store, the primary distribution channel for Chrome OS software.

The move was largely symbolic: The Office Online apps have long been able to run within virtually any browser, including Chrome.

But by packaging the apps in Chrome's CRX file format and publishing them to the Chrome Web Store, Microsoft put its Office Online suite directly in front of Chrome users.

It was also a clear about-face for Microsoft, which last November ran an ad campaign in which personalities from the reality show *Pawn Stars* argued that Chromebooks were not legitimate laptops.

Microsoft's move was reminiscent of several that Google has made, including its release of a "Metro" version of Chrome for Windows 8, 8.1 and 8.1 Update that dramatically changed the Microsoft user interface. Google's strategy has been described as subversive by some analysts, who contend that its purpose is to assimilate devices running other operating systems into the search giant's ecosystem.

The goal of Microsoft's latest move is not to generate revenue but to remind users of Chrome and, in particular, Chrome OS that Office runs on their hardware. Another goal: To plant the seed that Google's browser and operating system can be part of the Office universe, especially Office 365, the software-by-subscription offering whose titles now run on a variety of platforms, including Windows, OS X, iOS and Android.

Documents, spreadsheets and presentations created in one platform can be viewed and edited in any other supported hardware.

— Gregg Keizer

Micro Burst

BY AGAM SHAH

The materials used to make the Samsung Galaxy S5 cost

21%

more than the parts used in Apple's iPhone 5S.

SOURCE: HS KTECHNOLOGY

DATA CENTER

Full Immersion Could Keep Servers Cool

Intel and SGI are testing a supercomputer that's kept cool by submerging the electronics in fluid — an approach that they say can dramatically reduce energy bills.

The companies built a proof-of-concept supercomputer that's kept cool using a fluid called Novec, which was developed by 3M. It's a dielectric liquid, which means electronic equipment can continue to operate when submerged in it.

Novec is already used in fire suppression systems. Intel and SGI say Novec cooling systems could replace fans and eliminate the need to use tons of water to cool data centers.

The technology could slash data-center energy bills by more than 90%, said Michael Patterson, senior power and thermal architect at Intel. But taking full advantage of the new approach to cooling would involve several challenges, including the need to design new motherboards and servers.

On today's motherboards, circuits are just the right distance apart to maximize heat dissipation. On equipment designed to be cooled with Novec, circuits could be packed together more tightly. But, like any redesign of computing equipment, that would be a big undertaking.

— AGAM SHAH,
IDG NEWS SERVICE



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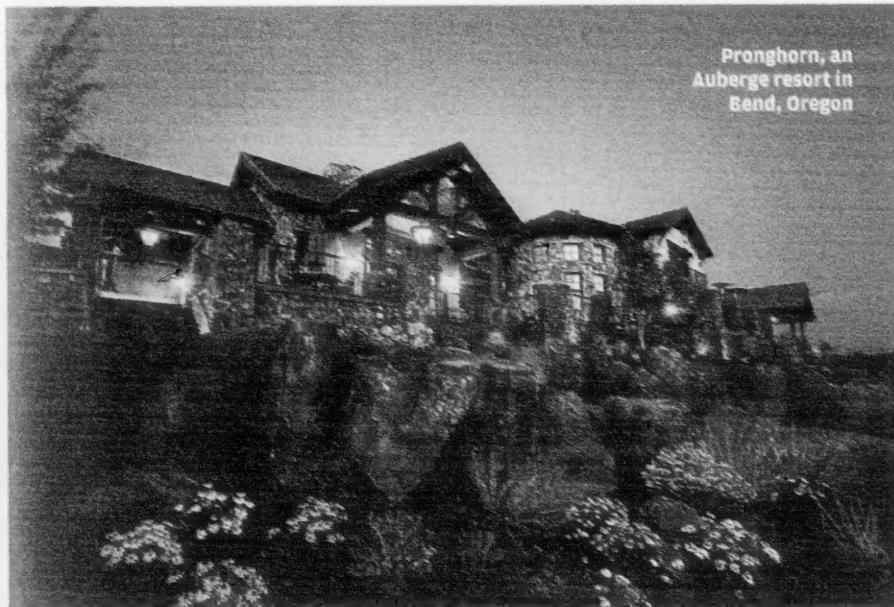
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**Pronghorn, an
Auberge resort in
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Chrome OS Books a Stay With Hotelier

Auberge Resorts is migrating from Windows machines to Chromebooks running Google's cloud-based services. **By Patrick Thibodeau**

MICROSOFT'S DOMINANCE in the corporate market may be mammoth, but it isn't absolute, as Tim Dickson has found.

The director of technology at Auberge Resorts, Dickson is overseeing a multiyear project in which 800 users at the operator of luxury resorts and hotels will migrate from Windows PCs to Chrome OS based Chromebooks and will begin using Google Apps.

The hospitality company began rethinking its technology direction in 2010 — at about the same time Google released its first Chromebook devices. Auberge was looking to make sure its Windows XP-based systems were upgraded before Microsoft stopped supporting the operating system in 2014. But the planning was complicated by the fact that the vendors that built Auberge's most important apps didn't have a path to Windows 7.

Dickson was already interested in Google Apps, and he had

purchased an early Chromebook model, the Cr-48. His first goal, though, was to unify communications systems that were fragmented across Auberge's various properties. For that, he chose Google's Gmail.

"That was a great first step, but over time we started utilizing other Google services — Docs and Hangouts," said Dickson. For most required tasks, users found that Google's hosted word processing and spreadsheet apps worked well. Auberge began building templates for the Apps environment, and ultimately migrated its documents to the Google Drive storage service.

The hard part of the project was migrating legacy tools to the Google operating system. In the Chrome OS world, HTML5 is a requirement for all applications, but "in the hospitality world," said Dickson, it's "almost a nonexistent solution." To get around that problem, Auberge used terminal services and a ThinRDP HTML5 wrapper. Users connect to older apps via their Chromebook browsers, but the terminal-server approach is temporary, Dickson said.

"I strongly believe that the platform of tomorrow is HTML5 and . . . the Web, rather than building applications to a specific OS," said Dickson, arguing that operating systems "are becoming obsolete."

Dickson described Chrome OS as a nearly "read-only OS" that eliminates vulnerabilities and helps centralize management.

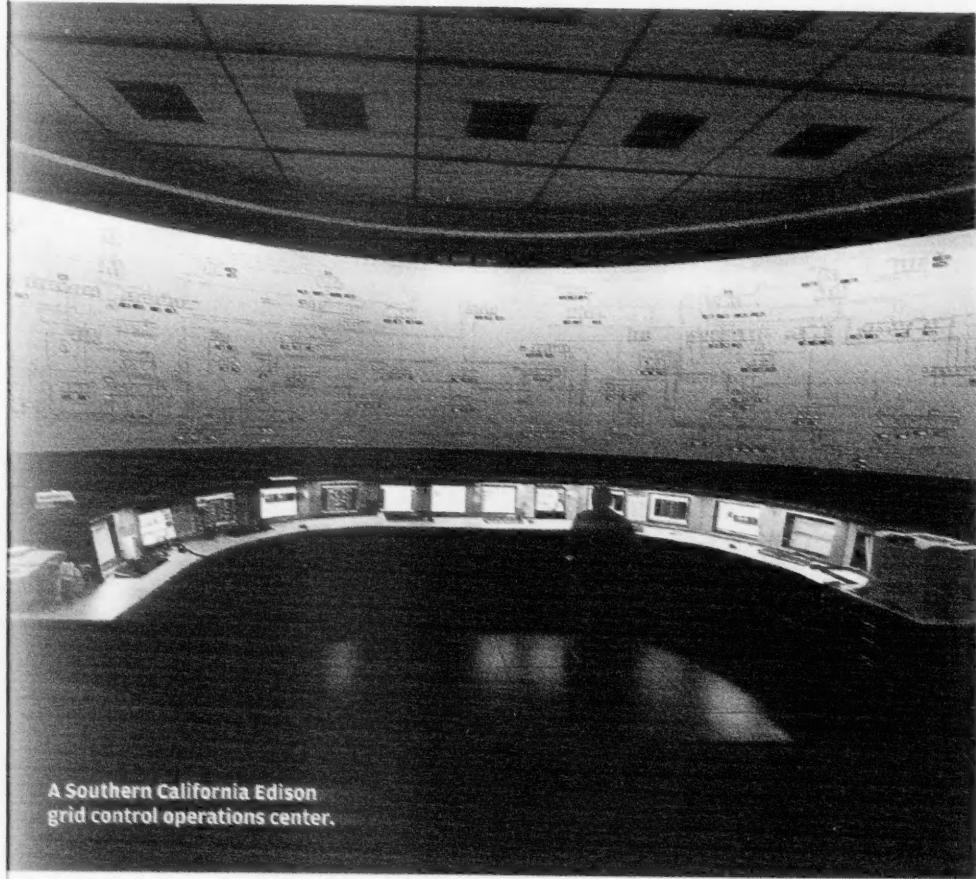
Auberge also adopted CloudLock and Backupify for security on Google Drive. CloudLock shows how documents are being shared and who has had access to them. It also scans documents for things like Social Security numbers, and it can take action if corporate security policies aren't being followed. And if a user deletes a Google Apps file, Backupify will have a copy.

The hotelier is now in the process of replacing its Windows machines with Chromebooks. Except for a few PCs running applications such as Adobe's Creative Cloud, Dickson expects a complete transition.

Business executives have embraced the migration plan because the new setup will be substantially less expensive than the Windows-based systems, said Dickson.

While Auberge is enthusiastic about the move, it is one of just a few businesses that have migrated to Chromebooks. The pared-down Chrome OS-based laptops accounted for 1% of the worldwide PC market in 2013. *

The platform of tomorrow is HTML5 and . . . the Web. [Operating systems] are becoming obsolete. — **TIM DICKSON, DIRECTOR OF TECHNOLOGY, AUBERGE RESORTS**



A Southern California Edison grid control operations center.

H-1B Loophole May Help Utility

Rules protecting U.S. workers don't apply to some employers if their visa holders earn at least \$60,000 or have master's degrees. By Patrick Thibodeau

SOUTHERN CALIFORNIA EDISON (SCE) plans to outsource some of its IT operations, and the jobs may end up going overseas.

The Rosemead, Calif.-based utility is likely working with Infosys, which is based in India, and iGate, a New Jersey outsourcer with major offshore operations, as it prepares to lay off IT workers, according to U.S. records.

SCE said it's still evaluating outsourcing vendors "and expects to select vendor partners by midyear," but it wouldn't identify the vendors it is considering.

Last fall, Hartford, Conn.-based Northeast Utilities announced that it was outsourcing part of its IT operations to

Infosys and India-based Tata Consultancy Services, and cut about 200 jobs. SCE isn't disclosing how many jobs it will cut, though local media estimate the number is in the hundreds.

The evidence pointing to offshore outsourcing, and to Infosys and iGate, is culled from government visa records. As part of the hiring process for workers holding H-1B visas, outsourcing vendors file a Labor Condition Application (LCA), a U.S. document with salary information and the address of the site where the visa holders will work. In the past year, Infosys also filed as many as 130 LCAs for an Irwindale, Calif., address associated with SCE IT offices, according to a large sampling of filings collected by visa data analysis firm MyVisajobs.

H-1B rules make it relatively easy for IT service providers to replace U.S. workers, despite measures aimed at curbing the practice.

If H-1B workers account for 15% or more of an employer's workforce, the employer is classified as "H-1B dependent" and is subject to additional requirements.

Such employers must take "good faith steps to recruit U.S. workers for the job for which the alien worker is sought," and also "offer the job to any U.S. worker who applies and is equally or better qualified than the H-1B worker," according to U.S. rules.

The rules became law about 15 years ago as "part of the quid pro quo of a major increase in the H-1B quota," said Ron Hira, a public policy professor at the Rochester Institute of Technology.

But H-1B-dependent employers are exempt from the U.S. worker protection rules if their H-1B workers are paid at least \$60,000 or hold master's degrees.

Hira calls the \$60,000 threshold and master's degree exemptions "a huge loophole." Both iGate and Infosys pay wages of more than \$60,000 a year and therefore aren't obligated to meet the rules for employers dependent on H-1B visa holders.

About 30,000 people work at iGate, and 4,000 of them worked in the U.S. at the end of last year — with nearly 50% of them holding H-1B visas. Infosys employs more than 100,000 people worldwide but doesn't disclose its U.S. headcount.

SCE said its outsourcing plan and vendor assessment process are at different stages in select business units. "Various alternatives are being explored to achieve operational and service excellence," the company said, adding that its IT unit "is one example."

While saying that it "has yet to finalize employee reduction numbers or percentages," SCE noted that it is "exploring several ways to support impacted employees" — perhaps with workshops on topics such as interviewing and résumé writing, job fairs with SCE vendors or "other transition opportunities with SCE." *

Mari Keefe contributed to this story.

THE Grill

Mike Heim

Whirlpool's CIO is moving 69,000 global employees to Google Apps.

Hometown: Cincinnati

Fun fact about yourself:
"I like to scuba dive with my son."

What's your favorite vacation spot? Hilton Head, S.C. "It's one place where we've been as a family where everyone is happy."

What's the next step you'd like to take in your career? "I'm on one outside board now, and I'd like to find a way to teach or consult or get myself on another board. The outside perspective keeps you very engaged."

If you retired tomorrow, what would you do? "I retired once, and I was bored."



PHOTO COURTESY OF TEXAS WILDER RESOURCES

WHIRLPOOL CIO Mike Heim is taking IT, and all the other business units, in a new direction. Heim is moving the company, with its 69,000 global employees, to Google Apps. He says the move could transform how Whirlpool employees get work done by increasing real-time collaboration. Indeed, he sees the potential for IT-driven transformation in other areas, too. Here Heim, who joined Whirlpool in May 2012 after 33 years at pharmaceutical giant Eli Lilly, shares his ideas on leading IT through change.

What was the biggest challenge of moving to a new company for the first time?

I spent most of my career in IT, but I had two significant cross-functional assignments, and I think those are important for anyone in IT. I spent three and a half years in finance and then three and a half years in the engineering function. There's nothing like being outside of your home function to see what you need to do differently. For me, those are important elements from a career development standpoint. And for me personally to work in engineering, where I wasn't an expert, I had to find



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ICS
You have to paint a vision for what's possible and then you have to be that possibility.

other ways to lead. So the biggest challenge was learning the business, and it was one of the biggest rewards, too, to see if what you've learned can apply somewhere else.

On the flip side, what did you see as the biggest opportunity in moving to a new company? What was really exciting — and you didn't have this in pharma — is this is a consumer-focused business, so one of the things I've had the most fun with is being an advocate for our products and our brands. In pharma, the customer was a bit diffused. Here we have a consumer, a user, and they have opinions, and the fact we can connect and engage with them is an interesting element.

Did that change your IT strategies? The biggest mindset shift is this is much more of an outside-in business. You're not looking for unmet medical needs. Here it's really about your competitive position, product leadership, speed to market, much more rapid cycle times, engaging the consumers and understanding their needs.

What was the biggest challenge you faced as the new CIO? I found that this is a global business, but it's run very regionally. And the IT operating model that was in place when I arrived, it was very central and it wasn't as responsive as it needed to be. So aligning the IT model to the business model so we're appropriately responsive was the biggest challenge. The way I approached that, I went out and met people in the regions and looked at our products in showrooms and factories. The products are very different in different regions, so we needed more agile operations than we could drive with a highly centralized IT model. So we're creating a much more business-focused IT model.

Can you summarize your objective as CIO at Whirlpool? It's driving business value through our IT investments. Every dollar you spend on IT is an internal

investment in your business and ensuring that those drive value in the business is crucial.

What's at the top of your agenda? The Winning Workplace really matters to us. It will touch every employee. It's email, calendar, chat — all these capabilities that allow us to work more effectively anywhere at any time and be more mobile. It creates a better work environment. We're just beginning the cutover to that platform. It's not just getting the tools implemented, but transforming the way work gets done.

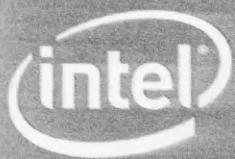
There's also tremendous opportunity for us in the connected space. Sensors are getting to be so low-cost that you're finding them in everything, and we will be able to put sensors into our products so we could predict the need for maintenance, monitor fluctuations in temperatures, [enable people to] download recipes to a stove. There's a whole set of things that let us create a better experience for our customers. And the connectivity and network effect to that will be the next big thing in appliances.

What's the biggest challenge with the Winning Workplace project? I think optimizing, leveraging the Google platform will be the greatest challenge. How do we take how work gets done to the next level? We're trying to think about those possibilities. Envision this: Superimposing sales onto a Google map and looking at trade partners, looking at sales in communities and the size of the sales bubble increasing over time, and then drilling down into that on a real-time basis. [That's] a different way of doing business. That can happen on a mobile device. You can bring out a chat or hangout to talk about that. It's immersive, and it's driving a different level of opportunity in how you react or plan. Contrast that to a report that comes out on the Monday after Black Friday on an Excel spreadsheet.

How do you drive innovation within your own IT operation? You have to paint a vision for what's possible and then you have to be that possibility. That means when you show up, [you have to ask] how do people experience you and what are they left with. I know that gets a little philosophical, but I believe in our products, and the contributions we can make to those products. One of the best things you can do is tell stories that resonate.

So you paint the right vision and create an environment where they feel they can win. Nothing happens without the people, and if you can't drive their passion and enthusiasm in a way that's linked to the purpose of the firm, you're just not going to get great output. I think we've been successful at doing that. Our chairman gives out something called W awards, and at the end of 2013 our IT department won a W award for highest employee engagement scores in the company. That takes the whole team believing.

— Interview by Computerworld contributing writer
Mary K. Pratt (marykpratt@verizon.net)



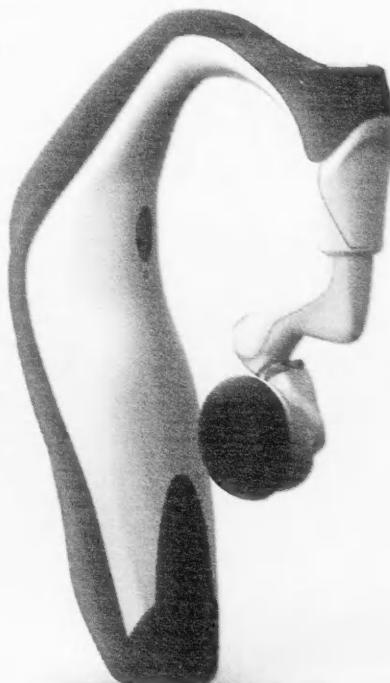
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OPINION

PRESTON GRALLA

60-Day Report Card: Straight A's for Nadella

What we've seen so far suggests that Microsoft's new CEO is his own man, willing to buck tradition.

FIRST IMPRESSIONS CAN BE WRONG. When Microsoft appointed Satya Nadella as CEO on Feb. 4, it seemed to be taking a safe path, turning to a 23-year company veteran — someone unlikely to rock the boat or veer from the course the company has charted for decades.

That expectation keeps getting upended. It's still early days, of course — Nadella's tenure stretches over just one quarter — but what we've seen so far suggests that the new CEO is his own man and is willing to buck Microsoft's traditional ways. Since I have long maintained that Microsoft has to get unstuck from what it has always done, my two-month report card for Nadella was filled with A's.

Let's look at what he did in that brief time.

At the Mobile World Congress in February, Nokia announced that it would release an inexpensive line of Android phones in the developing world. That wasn't exactly a Nadella decision. Microsoft's acquisition of Nokia wasn't yet final, and the company couldn't be seen doing anything that might have been regarded as meddling in Nokia's affairs. But the deal was already in the works, and I just can't believe that Nokia would have made a move that was so opposed to what we have come to expect from Microsoft (Windows, Windows, Windows, always and forever, no operating system but Windows) without at least tacit approval from that company and its new CEO.

Nor does it seem likely that Nokia CEO Stephen Elop would push ahead with those Android phones if such a decision could make things uncomfortable for him in his forthcoming role as executive vice president of Microsoft's devices group.

The upshot is that Microsoft will soon own a company that is making phones that run a non-Windows operating system. Before Nadella, this would have been heresy.

Releasing Office for the iPad may not rise to the level of heresy, but it was a gutsy move. True,

Nadella's predecessor, Steve Ballmer, made that decision. But Nadella could have vetoed it, or he could have delayed the release until a touch-based version of Office was ready for Windows tablets. I suspect that Ballmer would have waited. Nadella didn't.

If these examples don't convince you that fundamental change is underway at Microsoft, consider this: The company will be giving away Windows. At its Build conference, Microsoft announced that it will no longer charge hardware makers installing Windows or Windows Phone on devices with screens smaller than 9 inches. The New York Times estimates that Microsoft has been getting, on average, \$15 per license for Windows Phone devices and smaller tablets. I see Nadella's willingness to forgo that potential revenue as evidence that he really believes in the devices-and-services future of the company. And it might give Microsoft a head start in the so-called Internet of Things.

Finally, I give Nadella an A+ for this Build announcement: Microsoft will bring back the Start menu in Windows. That's a symbolic move, but it shows a willingness to admit and fix past mistakes, something Ballmer was never very good at.

I also like that Elop is getting such a high position at Microsoft. He had been in the running to succeed Ballmer. Giving a rival a chance to shine shows that Nadella has confidence in his own role.

Of course, another early report card on Nadella's tenure was issued by a higher power than me: Wall Street. Two months after Nadella took the helm, Microsoft's stock was trading at more than \$40, up 11% since his accession. I think that's the Wall Street equivalent of straight A's. •

Preston Gralla is a Computerworld.com contributing editor and the author of more than 35 books, including *How the Internet Works* (Que, 2006).



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This savvy group of CIOs share ideas to boost their industry and promote tech innovation within their state. For members, expert advice is never more than a phone call away. **BY JULIA KING**

Michigan's IT Power Team



THREE YEARS AGO, when David Behen signed on as the state of Michigan's CIO at the age of 42, he knew he didn't have all the knowledge or experience he would need to do the job. So he did what he says any good leader would do — he asked for help.

Behen sent his request for assistance to both public- and private-sector IT executives across the financial, healthcare, automotive, transportation, education and government sectors.

"I told them, 'I can't give you money and I can't guarantee you contracts,'" he recalls. "But to a person, they all came back and said the same thing. 'If we can work to help the state of Michigan, it's going to help all of us.'"



» State of Michigan
CIO David Behen
(front), flanked
by CIO Kitchen
Cabinet members
Subra Sripada of
Beaumont Health
System, Linglong
He of Quicken
Loans and Greg
Knott of Ryder
System.

COVER STORY

Thus was born the CIO Kitchen Cabinet, a unique group of roughly two dozen IT executives from the Greater Detroit area who meet monthly to discuss critical business and technology issues. Initially, their main purpose was to advise Behen on matters ranging from bring-your-own-device and cybersecurity policies to reinventing economically ravaged Detroit and the rest of the state as a magnet for high-tech workers.

But in the two-plus years that the group has convened, advice and guidance has flowed freely in multiple directions, participants say. What started as an ad hoc advisory board for the state's new CIO has morphed into a pan-industry council of IT leaders who regularly and generously exchange ideas and best practices, in addition to gaining exposure for themselves and their organizations.

"The idea at first was to advise me, and then we morphed to a group about how to move the ball forward for all of us," says Behen. It's absolutely turned into more than I ever thought it could be."

An Inside Look

On this particular day, the 17-person group convenes to hear Linglong He, CIO at Quicken Loans, a perennially top-ranking entry on Computerworld's Best Places to Work in IT list, describe how the Detroit-based online mortgage company attracts and retains top IT talent. Aside from the much-publicized all-day popcorn and pingpong games available to IT staffers, there is an employee referral bonus program, training retreats in Las Vegas, regular salary increases and other bonuses.

"But money isn't the only thing that keeps people happy," He tells the group. Every Monday afternoon, calendars are kept clear so employees can work on their own pet projects.

"We also provide time for people to be innovative," she says. "All of the conference rooms are reserved, and we have a lot of innovative stuff come out of that time. It's an inexpensive way to provide time for employees to be innovative."

AN INSIDE LOOK of the CIO KITCHEN CABINET

- 1 Establish long-lasting strategic partnerships between private-sector partners, local governments, educational institutions and the state of Michigan.
- 2 Provide expert advice and assistance to the state CIO to address Michigan's specific challenges.
- 3 Work together on new technologies and innovation.
- 4 Recruit top talent to the state.

But many of the CIOs gathered here are from organizations that don't have the time, money and/or staff to allow techies to work on their own innovations during working hours. Others are constrained by rules governing union personnel. And in some cases, dedicated innovation time doesn't jibe with company culture. But despite the differences in their organizational cultures, all of the members extol the value of each and every discussion the group has had as well as the numerous benefits of meeting regularly with their peers.

"It's my view that in IT, it is always good to see and learn about other environments and arenas," says Mark Cybulski, CIO at ZF North America, a

driveline and chassis manufacturer that's one of the top 10 global suppliers to the automotive industry.

"My environment is not the same as many others in the group. For instance, we use lots of software packages and computer-aided engineering and, so far, we don't have pingpong tables or beach balls here. But discussing other topics, such as hearing firsthand evaluations of Google Apps or Microsoft [Office] 365, can jump-start your own efforts," he says.

Even more valuable, Cybulski says, is the face time with fellow IT executives from other companies.

"Meeting as a group changes the mindset around collaboration. People are willing to divulge things verbally and face-to-face that they're not going to post online or tweet about. They're not going to tweet that they just had a massive failure with a cloud supplier. But here, if someone asks about my experience with a certain supplier, I'm willing to talk about things that they might want to be wary about and share lessons learned."

Open for Ideas

Members say open-mindedness and adaptability are keys to glean the greatest benefits from their discussions.

Today's meeting is a prime example. Many of the CIOs

To Protect a Network

In 2012, the state of Michigan recorded an average of 187,000 cyber anomalies every day across government computer networks. CIO David Behen took the issue directly to the CIO Kitchen Cabinet.

The issue shot straight to the top of the cabinet's priority list. The CIOs assembled their chief information security officers into a cabinet of their own to collaborate on the issue. The end result: Michigan's first-ever Critical Cyber Response Strategy, a comprehensive framework for preventing, responding to and recovering from attacks on Michigan's critical infrastructure.

Released in September 2013, the strategic plan quickly attracted the attention of the White House and was held up by the Obama administration as a model for other states to follow.

"The CISO Cabinet gave us the opportunity to learn from each other. I learned from Consumers Energy, DTE Energy, Blue Cross and Blue Shield in Detroit and others," says Dan Lohrmann, chief security officer for the Michigan state government. "We toured each other's facilities and saw how each other ran security operations. In this group there is a lot of trust. By and large, there has been a real freedom of sharing."

"The good thing about all of this is no matter how large or small the members, we all have similar problems," says Behen. "The diversity of thought and in the way we all do things is of immeasurable value. The cyber disruption plan would never have been created if this group didn't come together on it."

— JULIA KING

seated around the large conference table can't implement a bonus program or take their teams to Las Vegas, but they have adapted some of Quicken Loans' practices to suit their own organizations.

Oakland County Deputy Executive and CIO Phil Bertolini, for example, has reworked project management schedules to include lots of creative time as a way to provide county IT employees with opportunities to innovate freely.

At BorgWarner, an automotive components supplier, CIO Jamal Farhat, another cabinet member, has instituted innovation awards for IT employees. Daniel Rainey, IT director and CIO for the Detroit Water and Sewerage Department, is revamping job titles and classifications within his organization so that they are more in line with IT positions in the private sector.

Subra Sripada, CIO at \$2.3 billion Beaumont Health System, has instituted customized career maps for individual IT employees as a retention tool. That way, staffers can see future opportunities within the healthcare provider, he says.

"It's one thing to sit in your office and bury yourself in day-to-day work, but the real value and the wins come from reaching out to people across industries who are doing a like function and learn from them," says Bertolini.

That includes competitors. The key is sticking to noncompetitive issues that affect everyone, says member Steve Pickett, CIO at Penske, a \$4 billion transportation company that competes with \$6 billion Ryder System, whose vice president and CIO, Greg Knott, is also a member of the cabinet.

Talent recruitment and retention is a perfect example, Pickett says. "The state of Michigan is doing a pretty good job of attracting technical talent with all of us working together to enhance that message," he says.

In fact, today's meeting of the Kitchen Cabinet is being held in a former General Motors facility now occupied by Hewlett-Packard, which not only bought and renovated the building, but also brought with it a large number of IT jobs when it moved its public-sector business to the Detroit area.

"With a common goal, the message from Quicken Loans, Penske, Ryder and Beaumont to attract talent is a similar-sounding message," Pickett notes. "The state of Michigan now has a big initiative to attract technical talent, and working together is what has caused the messaging to be consistent."

The guidance and information sharing also extend beyond the regular monthly meetings.

"The big value out of this are the personal relationships," says Rainey. "If you get into a bind professionally, you have a group of people you can reach out to, and a lot of them have experienced the same issues you have."

"You also get a broader perspective," he adds. "One of the risks of public-sector organizations is that they can get very insular. They tend to look at other organizations just like them. I belong to an organization for municipal CIOs, and it's a great organization, but we all have the same constraints and are in the same business. The Kitchen Cabinet puts me in an environment where the people are all different."

"Members are CIOs of the organizations that are the lifeblood of this region. To learn from them, work with them and build relationships with them is of immeasurable value," says cabinet founder Behen. "I can talk to any one of these well-known and well-regarded CIOs. It can be a personal or professional matter, and I know they'll pick up the phone." ♦

Build Your Own Kitchen Cabinet

Collaboration and cooperation are at the heart of what makes Michigan's CIO Kitchen Cabinet work so well. But there are several other key ingredients to ensuring the success of such a group, members say.

"There first needs to be a rallying cry for the entire group," says Doug Wiescinski, a cabinet member and partner at Plante Moran, a Southfield, Mich.-based management consultancy.

With Michigan's CIO Kitchen Cabinet, "everybody shares the same mission in that everyone wants the state of Michigan to do well, and this was a way that IT professionals could help," he says.

At the same time, there must also be trust if the group is to discuss issues with candor. "There's an understanding with the group that what is shared in the room is meant to be kept in the room,"

he says. "People come back because they get the benefit of that candor. They can walk away after a couple of hours in a meeting and have a nugget of information they can use."

Certain things are best spelled out in writing, however. Kitchen Cabinet founder **David Behen** (inset), the state of Michigan's CIO, says several members have had their internal legal departments review documents and ask cabinet members to adhere to nondisclosure agreements in cases where sensitive issues were discussed. But for the most part, competitive concerns have been minimal to nonexistent, and when they do crop up, they tend to be dealt with informally.

"People selectively don't come sometimes," if the scheduled topic of discussion is too sensitive, Behen says. "That's the freedom of the group."

Making sure the group doesn't get too big is another key to success, says Oakland County CIO Phil Bertolini.

"My advice is to find the right people and start small and then determine what the wins and benefits and value to be gained are by each person in the room. If it's not a win, people stop coming," he says. "We all know each other well enough that we're not afraid to throw things out on the table. If you had 100 people, you're less likely to talk."

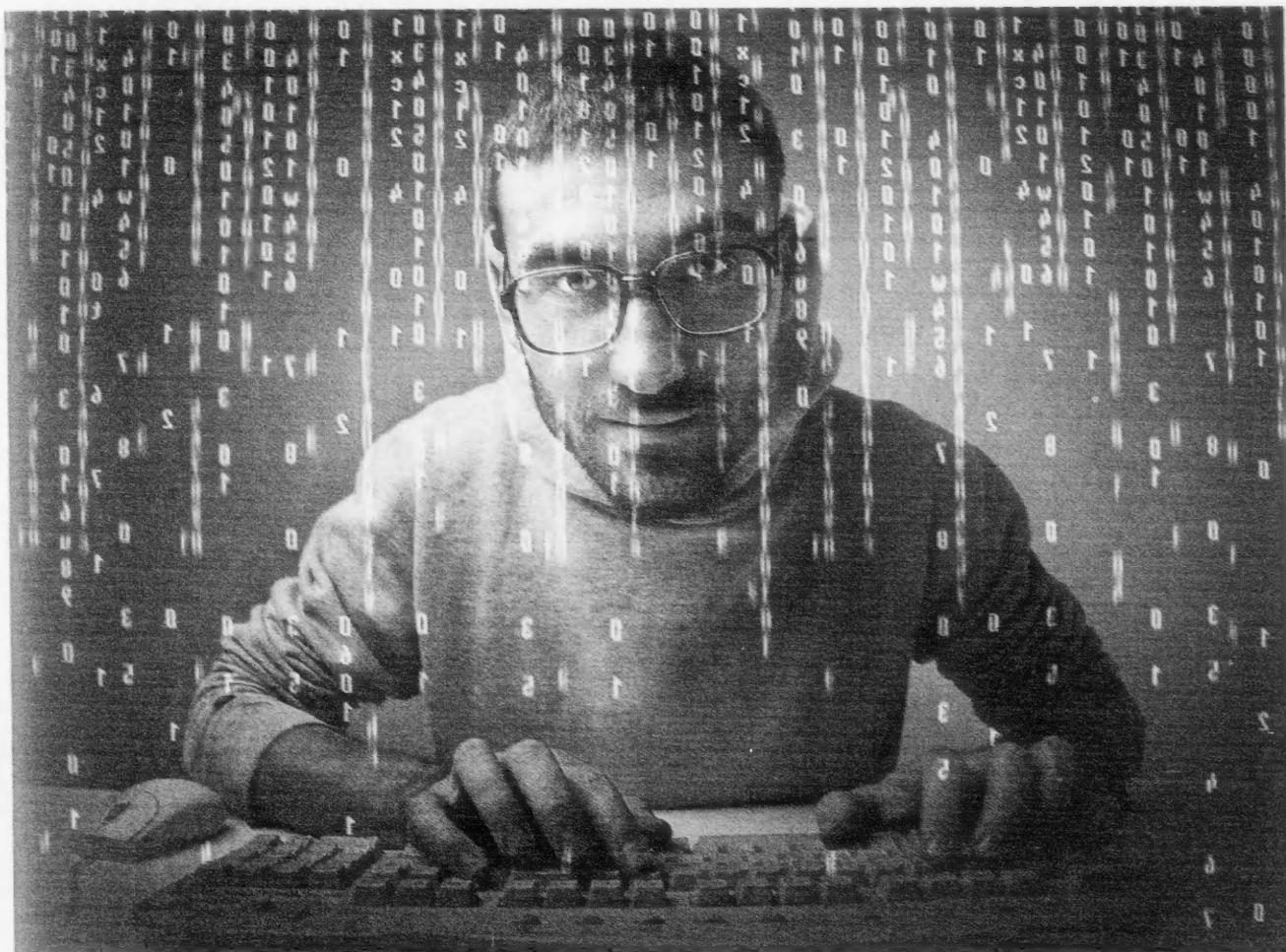
Members also say it's essential for the group to address a variety of issues that impact everyone. "There's value in the variety, and you're always getting perspectives outside the industry you deal with," says BorgWarner CIO Jamal Farhat. "For me, it's very good to see how hospitals and banking do things versus just the automotive industry."

Chemistry among members is another component to consider. "Most of the people in the cabinet are people who [Behen] and I know, and we have been sensitive to ensuring that we all have good chemistry," says Wiescinski, who helped Behen select and solicit the group's members at the outset. "We wanted to make sure we didn't have anyone who is too domineering. We wanted people to be open, but on the other hand, we didn't want anyone talking to the press about the conversations we held."

The two also made sure to recruit a mix of leaders from organizations of all sizes in a variety of industries.

The formula seems to have worked: "My sense is people would not participate unless they got benefits," says Wiescinski, "and the fact that the cabinet keeps going on suggests to me that it's of real value."

- JULIA KING



SAYING YES to open source

WHEN individual developers think of open source, they think "free." And with good cause: Who in their right mind wouldn't be interested in technology that they can get at no cost and use with few licensing restrictions?

When companies think of open source, these days they think "business agility," a quality they increasingly value above all others in the fast-changing marketplace.

The ability to create new applications quickly, reliably and economically is drawing businesses big and small to open source and emboldening them to use it for ever-larger

Open source isn't just about saving money – enterprises are adopting it to develop applications faster, with higher-quality components. **BY HOWARD BALDWIN**

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OPEN SOURCE

projects, IT practitioners say.

Which is likely why open source's popularity is booming (with a few holdouts). According to the Forrester Research report "Development Landscape: 2013," 76% of developers have used open-source technology "at some level," says Jeffrey Hammond, a Forrester analyst specializing in application development and delivery.

Here are four key reasons why organizations of all sizes are taking open source seriously.

Open Source Keeps Costs Down

A desire to save money may be only part of open source's allure, but it's a big part, no matter what size the organization. "How can Netflix charge as little as \$8 per month for its service?" Hammond asks. "Because everything is built on open-source software. They focused on content, not building an operating system or a testing framework."

"It's like using Spring, JBoss or Drupal for content management," Hammond says. "Companies get the 'Lego blocks' for free, so they can spend their time and resources building what they want in particular." Enterprises have always customized packaged software such as ERP systems, and with open source, that customization is less expensive.

Indeed, in some cases, open source is helping to bring back custom development of applications, an option that has declined in popularity in the past 10 years or so as the use of commercial applications and software-as-a-service offerings has gained ground.

Taking on some custom development work in order to save money appealed to Carestream Health. A \$2.5 billion provider of dental and medical imaging systems with 8,000 employees, Rochester, N.Y., based Carestream wanted to consolidate the data from its worldwide manufacturing facilities into a single product life-cycle management (PLM) application to reduce new product development and manufacturing time by routing information more efficiently.

"We wanted consistent management of product-related information across our global company footprint," says David G. Sherburne, director of global R&D effectiveness and engineering IT at Carestream. "With a modern platform in place that could be built upon into the

OPEN SOURCE Bails Out Small Business

AT DEVELOPMENT IS CHILD'S PLAY, a Cupertino, Calif.-based children's occupational therapy practice, owner Teri Wiss spent several years looking for an application that she could use for scheduling and billing.

She used Google Calendar so that if one parent canceled an appointment, other parents could quickly see newly available slots — but she also had to synchronize that calendar with a paper-based calendar that the therapists used. For the sake of efficiency and accuracy, she needed an electronic application.

The options she evaluated but rejected included tools that handled billing but not scheduling, systems for sole practitioners instead of offices with multiple practitioners, and software designed for medical issues that weren't germane to occupational therapy. Some software was customizable but not user-friendly. Wiss marveled that, even in the midst of Silicon Valley, "I couldn't find something I liked at a price I could afford."

Finally, Wiss was introduced to Ron Pitt, a Poway, Calif.-based consultant. He understood her frustration. "When you have a small business like hers, it's hard to commit to thousands of dollars upfront and then monthly [fees]," says Pitt. He agreed to custom-build an application for Wiss using Linux, Apache, MySQL, PHP and the NetBeans IDE. The cost: \$5,000 plus a few hundred dollars for hosting and backup each month, about the same as an annual fee for a SaaS application.

Pitt retains the rights to the code, so he can create another application for another occupational therapist if he wants. He was able to charge just \$5,000 because the code is "free [and] modular, and the tools are robust," he says. "It's good, solid software engineering."

— HOWARD BALDWIN

It's like using Spring, JBoss or Drupal for content management.

Companies get the 'Lego blocks' for free, so they can spend their time and resources building what they want in particular.

JEFFREY HAMMOND,
ANALYST, FORRESTER RESEARCH

future, we were expecting a 5% productivity gain through the integration of existing point solutions and the elimination of manual process steps."

Carestream chose Aras, an Andover, Mass.-based PLM vendor that uses an open-source model to encourage its customers to develop and share new components with one another. Aras had "the best functionality for a reasonable total cost," says Sherburne. "It didn't have some of the functionality we needed, so we knew we'd have to do some extra development, but when we completed that, we knew we could deploy it globally from a fixed-cost perspective."

There were no upfront licensing costs, so Carestream could move forward without having to purchase and inventory licenses. "The subscription model allowed us to enter into the PLM project

and focus on proper implementation," says Sherburne. "It provided a fixed-cost platform that can be enhanced over time and scaled to allow more collaborative access without continued cost outlays."

As projected, Carestream came out ahead: Its ongoing costs for approximately 1,500 users (1,000 internal employees, 500 suppliers) when the software is fully deployed are at "the low end of six figures," says Sherburne, as opposed to "millions of dollars upfront" for a packaged application, not including the cost of ongoing maintenance, he says.

Big businesses aren't the only organizations that benefit from open source's cost structure. The economics mean that smaller entities with niche software requirements can get what they need in a cost-effective package.

Teri Wiss, owner of Development Is Child's Play, a Cupertino, Calif.-based children's occupational therapy practice, had spent several years looking for an application that would handle scheduling and billing for her staff of 16 full- and part-time employees.

She evaluated a variety of healthcare-oriented software packages, but none offered the specific functionality she was after. And because of the uniqueness of her specialty, Wiss says that few SaaS applications met her needs — and those that might have were too expensive.

She finally decided to grow her own, turning to an open-source developer whose one-time fee was about the same as the cost of one year of access to some of the SaaS offerings she'd looked at. "I was concerned because I didn't speak 'computer' well enough to tell someone what I wanted," Wiss recalls. "But [the consultant] said to just tell him the way I work." (See "Open Source Bails Out Small Business," page 20.)

Open Source Improves Quality

Fans of open source have long contended that the open-source approach produces better software. Their reasoning: If code is flawed, the developer community can identify and address the problem quickly, whereas a single coder might plod on unawares, at least for a while.

That quality appeals to Bank of America. "We have a broader range of choice when it comes to high-quality software," says Peter Richards, the bank's

There is a consequential benefit [to open source] from both a reliability and a financial perspective.

PETER RICHARDS,

MANAGING DIRECTOR OF GLOBAL BANKING, BANK OF AMERICA

managing director of global banking in New York. "There is a consequential benefit [to open source] from both a reliability and a financial perspective."

The bank regularly integrates open-source components into custom-developed applications — but only after they're certified. "We go through a process of ensuring that they're appropriate for use within the bank's development environment," Richards says.

Asked if it's surprising for such a large company to use open source, Richards cites Linux's path to widespread acceptance in commercial organizations. In the beginning, enterprises worried that Linux was a hobbyist's operating system, not one that a big corporation could depend on. But over the years, he notes, "the number of people who support Linux through peer review have made it

into one of the better operating systems for corporations."

"The quality of open-source code for development comes because of the number of people who are able to contribute, review and test it," Richards argues. "That means it's a solid piece of code." That development structure also ties back into cost: "If you had to pay for that yourself, you'd end up with enormous costs because you'd have to do testing and code review yourself," he adds. "That's one of [open source's] big advantages: quality at a reasonable cost."

Open Source Delivers Business Agility

Not to be confused with agile development, business agility is the ability to react quickly to marketplace demands. Open source provides that ability to developers and businesses alike by speeding up the pace of software development.

Ron Pitt, the developer who worked with Wiss at Development Is Child's Play, is a partner with software consultancy LevelHead Solutions in Poway, Calif. If he needs new code for a project, he downloads it in minutes rather than developing it himself. "Sure, some of it's buggy, but I'd rather spend 15 minutes debugging it than writing it from scratch in 15 hours," Pitt says.

Businesses likewise benefit from open source's ability to let them react quickly. For one thing, companies that use open software code aren't tied to vendors' timelines for commercial application upgrades. "If you have to wait for vendors to make the changes you want, it affects the pace at which your company can innovate," says Mike Milinkovich, execu-

OPEN-SOURCE Holdouts

THOUGH MANY DEVELOPERS — and an increasing number of enterprises — are bullish on open source these days, not everyone is on board. In a survey from the fourth quarter of 2011, Forrester Research found that developers who declined to use open-source tools — specifically, integration tools — primarily shied away because they worried about support (a concern cited by 71% of the respondents) and the lack of technical skills to manage open-source efforts (an issue for 42% of the respondents). Respondents also mentioned concerns about security and licensing to a lesser extent.

— HOWARD BALDWIN

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OPEN SOURCE

tive director of Ottawa-based Eclipse, an open-source community for individuals and organizations focused on tools originally launched by IBM for Java.

Madhu Nutakki, vice president of digital presence at healthcare provider Kaiser Permanente in Oakland, Calif., concurs that open source brings value in the form of flexibility.

Kaiser Permanente has been using the GitHub source code control system since 2011. "It was built by developers for releasing code in an expedited way. It gives us more flexibility when we release updates more frequently," says Nutakki. (Note that while GitHub also works with proprietary development tools, Kaiser uses it primarily for open-source deployment.)

"We started using GitHub because our paradigm changed to a faster release model," Nutakki explains. The healthcare provider's increasing push into mobile means that it's now serving customers who have higher expectations for frequent updates. "We used to build large applications with a release cycle of every six months. Over the last two years, we do releases more quickly — monthly, quarterly and even faster," he says. "With other products we were using, it took much longer to do a build. With GitHub, it takes an hour."

Forrester analyst Hammond confirms that open source's speed advantage is making it more popular in enterprise IT development. "If you ask a developer how they're going to handle a specific project, they can respond that they don't have to buy specialized hardware, because they can run it on Linux. They can use an open-source development framework, and they can develop what someone needs specifically."

Open source also brings a lot of "elasticity" to the process of spinning up new resources, Hammond says. "You don't have to ask, 'Do I have a license?' or 'Do I have to buy more software?'" he says. That's why there's a high correlation between cloud-based and open-source software, he points out — both provide a scalability and flexibility that companies haven't had in the past.

Open Source Mitigates Business Risk

Another, perhaps unsung, benefit to using open-source tools, and thereby reducing dependence on a single or multiple

[Open source] gives us more flexibility when we release updates more frequently.



MADHU
NUTAKKI,
VP, KAISER
PERMANENTE

vendors, is that the open-source option may reduce business risk. Milinkovich notes that when the company developing Topcased, a development tool for embedded systems, was acquired, "the developer stopped working on it." So the companies that used it and loved it, notably Airbus, banded together to fund other developers to continue supporting it.

Vendors come and go, and commercial priorities change, whereas a community's focus is more constant. "The openness and transparency of open source mitigates a lot of risk," says Milinkovich. "Whether a company is big or small, it'll stop developing code if it's no longer commercially viable, and you no longer have access to the source code and repositories. If you can actually get a vibrant community built up around your code, it's much more resilient than a strictly commercial enterprise."

Gerald Pfeifer, director of product management for Nuremberg-based SUSE, which offers an enterprise version of Linux, believes that open source is thriving for all these reasons.

"People are reaping cost benefits by using open source, but that's not the No. 1 priority. It's also the avoidance of lock-in, the ability to customize, the ability to have a better feel of what you're paying for. It's the combination of all that," Pfeifer says. "You're sharing development costs with other people, so you get more diversity and more independence than from a single vendor." ♦

Baldwin is a Silicon Valley-based freelance writer and frequent contributor to Computerworld.

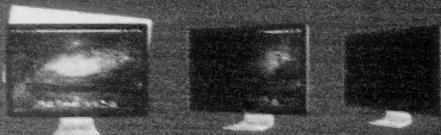
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SMART CITIES *get* SMARTER

Big data, mobile, sensors and social media are already in use, but security and privacy are issues. BY BOB VIOLENO

MART CITIES aren't a science fiction, far-off-in-the-future concept. They're here today, with municipal governments already using technologies that include wireless networks, big data/analytics, mobile applications, Web portals, social media, sensors/tracking products and other tools.

These smart city efforts have lofty goals: enhancing the quality of life for citizens, improving government processes and reducing energy consumption, among others. Indeed, cities are already seeing some tangible benefits.

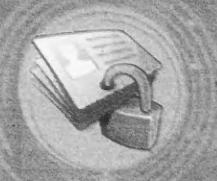
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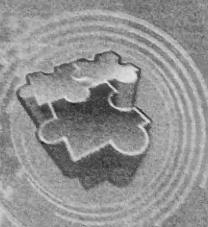
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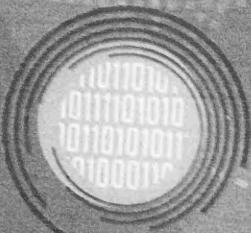
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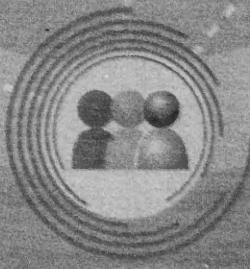
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But creating a smart city involves challenges, such as finding ways to safeguard data, ensure user privacy and persuade multiple departments to work in harmony.

What makes a city smart? The definition varies. But in general, a smart city initiative includes the use of information and communications technologies to engage citizens and improve municipal operations and the quality of life by better managing economic development and use of natural resources, among other things.

Making cities smarter will become increasingly important. For the first time ever, the majority of the world's population resides in cities, and the proportion continues to grow, according to the World Health Organization. Here's how three U.S. cities are using technology to help manage it all.

Scottsdale, Ariz.

The city of Scottsdale, Ariz., has several initiatives under way. One is MyScottsdale, a mobile application the city deployed in the summer of 2013 that allows citizens to report problems such as cracked sidewalks, broken streetlights and graffiti.

Developed by App-Order, a company that specializes in applications for municipalities, MyScottsdale runs on Android and iOS devices. It allows users to choose from a list of problem categories and then file reports. Citizens can take pictures of the scene where they encountered the problem, add a description and then email the report to a call center that then routes it to the appropriate department.

In addition to citizens, users of MyScottsdale include city employees working in the field, such as firefighters, police and transportation workers, who use the app to help identify and quickly resolve problems such as safety hazards. City workers can send and receive information on their devices using a secure wireless network that covers the entire city.

"The world is becoming much more mobile; so many people have smartphones, and we're trying to capitalize on that to enhance services for citizens," says Brad Hartig, Scottsdale's CIO. Through the app, the city has received dozens of reports of various types of problems including graffiti, city code and zoning violations, street and alley maintenance issues, damaged traffic signs and broken stoplights.

In another initiative, the city built an intelligent traffic signal control system for its Traffic Management Center (TMC) that monitors traffic in real time and is designed to ease congestion on increasingly busy downtown streets. "This is not new to our industry, but what is new is the level of control it affords," says Bruce Dressel, manager of the TMC.



» The MyScottsdale app allows citizens to report graffiti and other problems in the community, such as cracked sidewalks, broken streetlights, and road and sewer maintenance issues.

"We see this as one more avenue for reaching people" and getting their opinions on various issues.

Dubuque, Iowa

In Dubuque, Iowa, the municipal government is overseeing a project called Smarter Sustainable Dubuque (SSD), part of the city's initiative to help officials meet residents' environmental, economic and social equity needs now and in the future.

Launched in 2009, SSD is a public-private partnership between the city, IBM Watson Research Center's Smarter Planet initiative and other organizations.

One completed project is Smarter Water, in which the city used IBM data analytics and cloud computing systems to reduce residents' water usage. In 2010, as part of a pilot, the city created a cloud-based portal that helped 151 households cut water consumption by an average of 7% — an estimated savings of 89,000 gallons over a nine-week period.

Savings were measured by comparing the water consumption of the pilot households with another 152 control-group households that had identical smart meters, but no access to the analysis and insights provided to the pilot group.

In a survey of people who used the portal, 77% of the respondents said it increased their understanding of water usage, and 61% reported replacing a water-

The system uses a wireless mesh network linked to more than 300 traffic signal controllers and 110 high-definition video cameras that monitor traffic flow, as well as 36 electronic signs that inform drivers in real time about traffic congestion and collisions.

With the system, city workers can precisely match traffic light sequencing with prevailing traffic conditions. The ability to view live video feeds from heavy traffic areas lets officials make fast decisions on how to prevent or reduce congestion, improve information given to drivers via the signs and actively manage traffic affected by special events, weather and emergency situations.

"What used to take two days to change signal timing at an intersection can now be done in two minutes," Dressel says.

Yet another project is Speak Up Scottsdale, a moderated online discussion forum where citizens can share their thoughts on a wide range of issues and comment or vote on ideas provided by other users. "To date, we have primarily found benefit from the site by soliciting input on a particular topic, and we marry that with the other public input that we receive using more traditional channels [such as] open houses, email, council meetings, etc.," Hartig says.

THE GLOBAL URBAN POPULATION IS EXPECTED TO GROW APPROXIMATELY **1.5%** PER YEAR BETWEEN 2025 AND 2030, MOSTLY IN DEVELOPING COUNTRIES, ACCORDING TO THE WORLD HEALTH ORGANIZATION.



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MIT Lab Looks at Smart Cities

THE SENSEABLE CITY LABORATORY, a new research initiative at MIT, focuses on studying how cities can use technologies such as sensors and handheld devices to improve municipal services.

"New technologies are reshaping our cities in a similar way to how the car shaped the city in the 20th century," says Carlo Ratti, director of the lab. He has no data that specifically tracks how many cities are using "smart" technologies, but "virtually all cities are interested" in doing so, he says.

Over the past decade, digital technologies have begun to blanket cities, forming the backbone of a large, intelligent infrastructure, Ratti says. "Broadband fiber-optic and wireless telecommunications grids are supporting mobile phones, smartphones and tablets that are increasingly affordable," he says.

At the same time, open databases – which people can read and add to – are revealing all kinds of information. "Add to this foundation a relentlessly growing network of sensors and digital-control technologies, all tied together by cheap, powerful computers, and our cities are quickly becoming like 'computers' in open air," Ratti says.

The value of these efforts lies in improving the ability of cities to respond to the needs of their inhabitants, he says. The aim is to generate a better understanding of the dynamics of the various interconnected pieces that make up the municipal environment in order to manage things in more efficient, and therefore sustainable, ways.

"In other words, by gathering information on how cities behave, we can better plan and manage them while raising awareness among citizens to hopefully foster a behavioral change," Ratti says. "The idea of a 'senseable city' is to engage in a real-time and ongoing loop of information, between the city and its citizens, toward enabling a more sustainable future."

— BOB VIOLENO

using appliance or changing the ways they used water.

The smart-meter system monitored water consumption every 15 minutes and communicated with IBM Research's cloud. Data collected included weather conditions, demographics and household characteristics. Using the cloud, the city analyzed the data to trigger alerts about potential leaks and anomalies.

Participating households were notified of any potential problems, and were able to get a better understanding of their consumption patterns and compare their usage anonymously with others in the community.

In the fall of 2013, in response to feedback from the pilot, Dubuque began offering a more simplified water portal from Neptune Technology Group called DBQ IQ.

"Citizen interest was in [getting] more direction and interpretation of what their data was showing," says Chris Kohlmann, information services manager for the city. People "want notifications based on deviations from their trends or exceptions and anomalies in their data," he adds.

When combined with the city's paperless utility billing and online payment system, "DBQ IQ offers [an] online one-stop shop for customers to interact with their water usage information from the same website where they are paying their bill," Kohlmann says.

Another pilot program, Smarter Travel, which was launched in 2011, uses a smartphone application developed by IBM Research and RFID technology to collect anonymous data on how, when and where participants travel within the community. IBM is analyzing the aggregated data. The city and its transit partners will use the findings to implement practices and policies to improve mass transit within Dubuque.

More research is underway at the county and regional levels, Kohlmann says. The data, gathered from 1,000 volunteers who opted into the transportation study, will be used along with data gathered by the city's public transportation system regarding ridership and use of the transit system.

The goals are to analyze movement patterns and model transit

demand. The results will help create a route design that maximizes ridership while minimizing costs and commute times, he says.

If more-efficient transit routes are implemented, Kohlmann says, operating costs are expected to decrease while the city's ability to meet public transit demand should increase.

South Bend, Ind.

One smart city initiative in South Bend, Ind., involves improving water management. The city's sewers were built to collect both sewage and storm water, and as a result they can pollute the St. Joseph River if they overflow during heavy rains. So officials turned to local technology company EmNet to develop a system to help keep sewers from overflowing.

In 2005, EmNet created a system called CSOnet (combined sewer overflow network). It includes wireless sensors, which EmNet installed under manhole covers to monitor water levels in sewer pipes. The sensors can open and close "smart" valves in the system, enabling flow to be directed into pipes where capacity is available.

The sensors also send the flow data via radio transmission to a central monitoring station, where wastewater workers can see when problems develop.

As part of the water management effort, South Bend is using a software-as-a-service offering from IBM called the Intelligent Operations Center for Smarter Cities. The service allows public works officials to view aggregated water management data in real time, which helps them predict where incidents will occur.

South Bend has invested \$6 million to implement the smart sewer system, which has reduced wet weather overflows by 23% and practically eliminated dry weather wastewater overflows in its first year of operation.

In comparison, simply expanding the sewer system via the conventional approach would have resulted in an additional \$120 million in capital expenditures.

"The biggest benefit is actually what we don't have to do" to address overflows, says Pete Buttigieg, mayor of South Bend.

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EMERGING TECHNOLOGIES

The screenshot shows the CityVoice app's main interface. At the top, there are tabs for 'LEARN', 'CALL', and 'LISTEN'. The 'LEARN' tab contains text about getting involved in the city's vacant and abandoned property initiative, including links to Indiana's Good Samaritan law, acquiring an abandoned property, and reuse options. It also links to a 'Helpful Information' guide. The 'CALL' tab provides instructions for reporting inaccurate information and includes a call-in code (574) 584-2969. The 'LISTEN' tab shows a message from Shubhada Kamblu, Director of Code Enforcement, with a play button and a timestamp of 0:40. Below these tabs is a map of South Bend, Indiana, with various locations marked by numbers: 287, 92, 461, 172, 22, 140, 12, and 4. The map includes street names like Western Ave, Lincoln Way E, and Mishawaka.

» **CityVoice**, a new app for residents of South Bend, Ind., helps gather feedback on vacant and abandoned properties. People can call in and leave voice messages, and they can vote online about whether a given property should be repaired or removed.

"The technology let us avoid an incredibly expensive capital project," reducing costs in what is already the biggest public works project in the history of the city.

Development of the smart sewer system "is happening in the spirit of our efforts to be a beta city that's willing to try different technologies if there's a chance they can benefit the community," Buttigieg says.

Another project, launched in August 2013, is the South Bend Open Data Portal. It offers access to municipal data related to areas such as social services, code enforcement cases and abandoned properties. "We're creating a huge amount of data that people should be able to get their hands on," Buttigieg says. "We're making the data readily available and easy to work with." One aim is to provide data sets and insights that could potentially benefit any government worker, citizen or organization, such as a company looking for a new location for an office.

Putting South Bend housing data online led to the development of CityVoice, an application for gathering feedback on vacant and abandoned properties (see below).

Facing the Future

Building smart cities comes with potential challenges, not the least of which is ensuring that information is secure.

"Networks are believed to be one of the least secure parts of the nation — often built with underfunded budgets by local

contractors who have relationships with city officials but little experience with government-level security," says Rob Enderle, principal analyst at Enderle Group. Moreover, network attacks aren't always reported, he adds.

Cities must harden their networks before embarking on smart city initiatives, Enderle says. If they don't, he adds, they risk having "a disaster that will make their smarter effort look pretty stupid."

Security is indeed an ongoing concern for municipalities, "and if anyone [in city government] said they've never had an attempted hack, I'd laugh," says Scottsdale CIO Hartig. "Every

single day we see hits against our firewall and people doing port scans. You've got to try to keep one step ahead and make sure you're doing things in a secure way. The more data you put out there, the more points of entry into your network, the more exposure you have."

To counter this, Scottsdale uses a multilayered security approach that involves both technological defenses and end-user training for city staffers, Hartig says.

South Bend's Buttigieg agrees that security is a priority. "There are always cybersecurity concerns," he says.

The need to ensure citizens' privacy is another issue cities need to keep in mind. "The main challenges that we face . . . are increased citizen surveillance and civic data collection, which in many people's minds inevitably leads to the infringement of citizen privacy," says Naureen

**Every single day
we see hits against our
firewall and people
doing port scans....
The more data you put
out there, the more
points of entry into
your network, the more
exposure you have.**

BRAD HARTIG,
CIO, SCOTTSDALE

Government is changing toward being more open.

JENNIFER BELISSENT,
ANALYST, FORRESTER RESEARCH

Kabir, director of the Urban (co)Lab, the applied research arm of the New Cities Foundation, a nonprofit institution in Geneva that promotes urban innovations through collaborative partnerships.

Cities also have to prepare for a new era of citizen engagement, where residents will more actively influence efforts such as urban planning and infrastructure maintenance.

"When you look at what it means to be a smart city, some people focus on the technology aspects; things like sensors and business analytics," says Jennifer Belissent, an analyst at Forrester Research. "But you need to consider governance and how government is changing toward being more open and increasing engagement."

Mobile technology and social media use have reignited citizen engagement, and this will only increase with the ever widening use of smartphones, tablets and social sites, Belissent says.

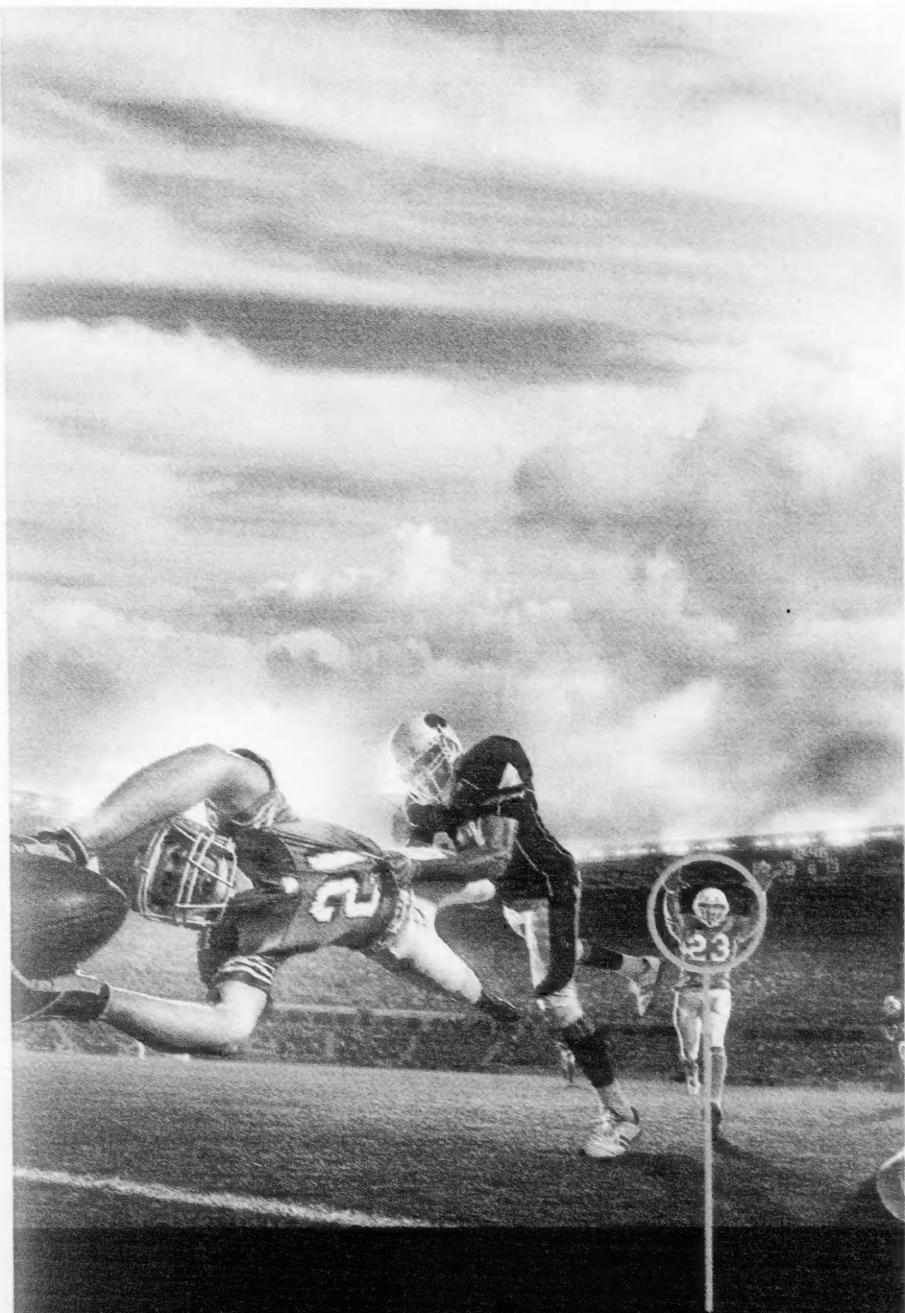
Getting government agencies to work harmoniously with one another — and with IT — is another challenge. "It involves a change in [management mindset] to move from siloed city departments to a more integrated and collaborative government unit," Belissent says.

Limited budgets represent yet another obstacle that smart city efforts must overcome. "Many cities are facing a dire economic financial environment," and smaller municipalities in particular are struggling, Belissent says.

Cost-saving IT efforts such as asset management, server consolidation and the use of shared services such as cloud computing will help bring down the costs of some smart city initiatives, as will the use of shared infrastructures.

"Cities will come together to jointly procure IT infrastructure," Belissent says, "and I think that model will really take off." ♦

Violino is a freelance writer in Massapequa Park, N.Y. You can reach him at bviolino@optonline.net.



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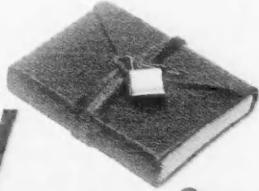
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Security Manager's Journal

MATHIAS THURMAN



A Deal Too Good to Be True

An offshore coding vendor offers a great price for quality work, but it may be stealing the company's source code.

MY COMPANY is always looking for ways to save money. One maneuver — outsourcing the development of a module of one of our software products — almost cost us big time.

We had chosen a provider in Southeast Asia, based not just on its extremely low cost but also on the quality of work we'd seen it deliver in the past, which was far superior to that of other low-cost, offshore locations. Recently, we decided to decrease the number of engineers working on the project, and the vendor ended up laying off one of the removed engineers.

That laid-off engineer

let us know that the vendor was using our source code to create a competing product. He either wouldn't or couldn't tell us many details, but he did say that our source code was being copied to USB drives to avoid detection and then being shared within the vendor company.

We had to act quickly to verify the accusation and stop the theft before all of our source code could be taken.

Our company policy is that vendors working in an R&D capacity must use

hardware that we provide. That's a good first step, but my preference, naturally, would have been to use that hardware to implement precautions that would protect our intellectual property. Unfortunately, we don't do anything special with those laptops.

We also didn't have any monitoring equipment at this small office. Now that we badly needed to monitor its traffic, we decided to quietly reroute it to Singapore, a main hub for us where we had recently deployed data loss prevention (DLP) technology. Next, we surreptitiously deployed endpoint DLP agents to the PCs in the office of the suspect vendor. Now we had

full visibility, both at the network layer and at the endpoint.

Block Those Drives

Within hours, we got a hit.

Two software engineers on the project were copying huge amounts of source code from their desktops (which shouldn't have been storing source code) to external USB drives.

We wanted to block that data and keep it off the USB drives. We looked at doing

Trouble Ticket

» **At issue:** An offshore vendor might be stealing the company's source code.

» **Action plan:** Quickly find a way to monitor the network, and then deploy an effective means of blocking USB ports.

this via the BIOS, but that proved to be difficult. A technician would have to go to the site and configure the BIOS on all of the PCs in the vendor's office. Not only would that take a lot of time, but using BIOS to turn off the USB ports would also block legitimate items, such as USB mice, keyboards and cameras, and all of those would be needed.

Next we considered employing the DLP endpoint agent to block USB drives, but we already knew about a bug that prevents the agent from differentiating between a USB drive and a second hard drive installed in the laptop. Our DLP vendor is working on a fix for that problem, but we don't have it yet.

We also investigated the use of Microsoft Group Policy Objects, and that may work for the long term, but that fix wouldn't be quick enough to meet our present needs. The quick-and-dirty option that we settled on to block the use of external storage devices was to change a policy configuration in our endpoint antivirus software. No one had to travel to the site, and we weren't disabling devices such as mice, keyboards and cameras. Critically important, we have a policy set up that makes it impossible for users to disable antivirus protection.

Now that we feel more secure about what is happening at the office of the offshore vendor, we will work with our legal and human resources departments to investigate the source code leakage in more detail. That vendor might not work for us much longer. I will also be advocating that we restrict the use of USB drives on all corporate devices used to process sensitive information. *

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.

We had to act quickly to stop the theft before all of our source code could be taken.

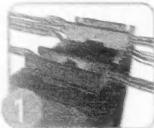
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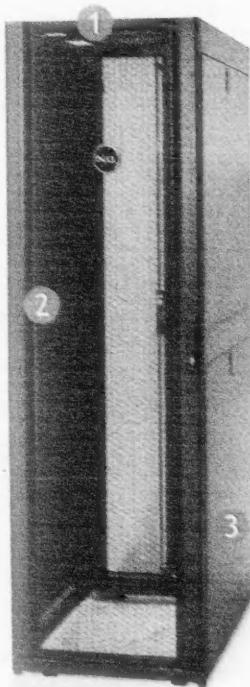


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OPINION

THORNTON A. MAY

Renaissance Lessons for Modern CIOs

The Renaissance has relevance to IT, and not just because IT is constantly being reborn.

AS AN ASIAN STUDIES UNDERGRADUATE, I tended to avoid anything to do with Western civilization. This was because I thought everybody already knew everything there was to know about Europe, dead white males were not in vogue, and what there was to know wasn't that

relevant to where the world was heading.

Now, having just returned from Florence, Italy, where I immersed myself in the rich history of premodern Europe, I recognize the error of my ways. The Renaissance, particularly the Italian Renaissance (the 14th to 16th centuries), has much to teach the modern CIO.

Before I discuss two of the most important lessons, let me note that IT people should be very comfortable with the term "Renaissance," and not just because IT is constantly being reborn. Coined by French historian Jules Michelet (1798-1874) and popularized by Swiss historian Jacob Burckhardt, the word is polysemous — that is, it possesses multiple meanings, as do many IT concepts, such as "big data" and "cloud."

Lesson 1: Celebrate Agency

What made the Dark Ages dark and what made the Middle Ages such a wonderful era to leave was the total lack of any sense of human agency. What is most exciting about the Renaissance is that it was the time when the upper echelons of society came to realize that they did not have to wait for someone else to solve their problems.

This sense of agency emanates from Michelangelo's famous statue David (1501-04). Crafted from a giant block of marble that other artists had abandoned as "unworkable," David presents the observer not with a king or a set piece of a biblical fairy tale but a modern man with a mission. Artists before Michelangelo portrayed the end of the David and Goliath story — David with the giant's head cut off. In this masterpiece we see

David anticipating the action ahead, thinking about what he is going to do. It is an embodiment of human agency, conceived by a young artist (Michelangelo was 29 when he finished the piece) seeing things differently than his forebears.

The message Michelangelo was sending to his fellow Florentines still holds for modern IT leaders: "We are David, and we need to get busy. We have to face our giants."

Lesson 2: An Elevated Status

Prior to Michelangelo (1475-1564), artists were viewed as subordinate members of society. They were perceived (and many perceived themselves) as being little more than day laborers. During the Renaissance, the status of artists (painters and sculptors in particular) was elevated from the bottom of the social pile to the top. This improvement in status is quite apparent in the arrangement of the "players" on the facade of the Duomo, the Cathedral of Florence. Artists are depicted below God but above the Virgin Mary. This differs significantly from the artistic narrative found on Gothic cathedrals. If humans appeared at all, they were depicted as small-scale figures and followed a rigid hierarchy: God, angels, saints, Jesus, Holy Mother, priests, kings, princes, donors, peasants.

In the Renaissance, creators were encouraged by patrons to think of themselves and their work as being at an intellectual and reputational level equivalent to that of the elite. The Renaissance lesson here is that CIOs (actually all IT practitioners) have to perceive themselves and be perceived as being at least the peers of other executives. ♦

Thornton A. May
is author of *The New Know: Innovation Powered by Analytics* and executive director of the IT Leadership Academy at Florida State College in Jacksonville. You can contact him at thorntonamay@aol.com or follow him on Twitter (@deanitla).



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Source: *Harvey Ad Measurement Study,
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Career Watch

ASK A PREMIER 100 IT LEADER

Stuart Kippelman The CIO at Covanta Energy has advice on moving into security.



I've been in IT support for a few years and now want to begin to focus on Internet security. What steps should I take to prepare for such a move? Since you're already in support, I'd say your first step should be to spend more time with security-related support. Ask your manager if you can work to specialize on the security incidents that come in. Being involved in security-related incidents will put you in the heart of Internet security and allow you to learn very quickly. From there,

you can move into many other areas of security-related IT.

I manage a help desk, but I seem to have few opportunities for growth. I'm feeling frustrated because I feel that many of my skills are going to waste. What should I do? The help desk (also called the service desk) is one of the most important areas of IT, and good IT management teams know that. You are the interface between the entire IT department and the company's user community. You make IT look good, or bad. Doing the job well requires enormous technical, coordination and communication skills. Therefore, your management should see you as a key leader in the company, and someone who is part of the long-term success of the department. With that said, you can leverage your skills in project management, program management and even software development. Talk to

your manager about becoming more involved in non-support-related projects. If that doesn't work, and management doesn't see your value, then it's time to look elsewhere.

If you have a question for one of our Premier 100 IT Leaders, send it to askaleader@computerworld.com, and watch for this column each month.

Crunching the BLS Jobs Figures



THE LATEST JOBS REPORT from the U.S. Bureau of Labor Statistics was pretty much good news for IT professionals, though just how good depends on how you interpret job categories.

Analyst firm Foote Partners says that the report for March shows there was a net increase of 10,900 IT jobs "across four industry job segments commonly associated with technology professionals" — computer systems design/related services, management and technical consulting services, telecommunications, and data processing, hosting and related services.

Foote Partners says the March performance was a continuation of the trend seen in February, when the firm said 10,200 IT jobs were added. And it's a huge improvement over November, December and January, three months that, combined, saw the number of IT jobs increase by just 5,400, according to Foote.

Nonetheless, the jobs growth of February and March lags well behind the first seven months of 2013, when monthly gains averaged more than 14,000 jobs, according to Foote Partners.

Meanwhile, Janco Associates also looks at four BLS job categories, three of them the same as the ones Foote Partners focuses on. But instead of "management and technical consulting services," it looks at "other information services." The result? In March, Janco says, 8,300 IT jobs were added, and only 17,500 were added in the last three months.

There's yet another way to look at the BLS report from an IT perspective. Dice calculates that the unemployment rate for IT professionals was 2.7% in the first quarter. That compares to 6.7% for overall unemployment and an IT jobless rate of 3.5% in the first quarter of 2013. As welcome as the improved figure is, it's still well above the record-low IT unemployment rate of 1.8% that Dice reported for the second quarter of 2007, before the Great Recession hit.

THE SKINNY on IT Unemployment

Q1 unemployment rates for selected IT job categories.

3.2%	Network and systems administrators
3.0%	Computer and information systems managers
2.8%	Software developers
2.7%	Database administrators
2.6%	Programmers
2.3%	Computer support specialists
0.8%	Computer systems analysts
0.8%	Network architects
0.7%	Web developers

SOURCE: DICE.COM/U.S. BUREAU OF LABOR STATISTICS

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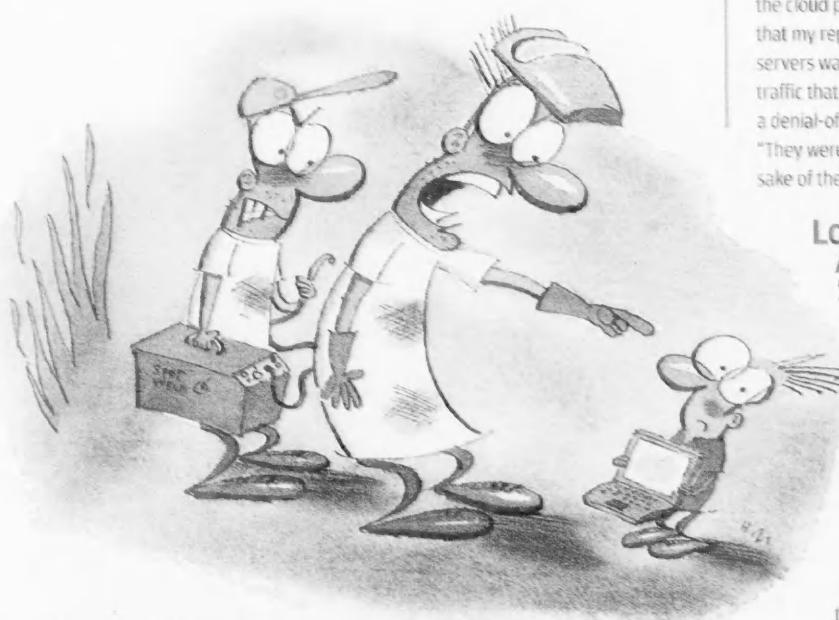
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HAL MAYFORTH

Nobody Ever Got Burned Blaming IT

Local supermarket chain's IT department gets a crisis call, about construction taking place in an existing store, says a pilot fish in the loop. "Sparks from a welder who was cutting through the roof fell into the computer room, setting everything on fire — including the point-of-sale server and the network equipment. The store had to be closed, since the fire in the computer room made the checkout systems unusable. We rushed to piece together equipment already in the office to replace everything

that burned. When we pulled up to the store, there was a large sign on the front door saying, *CLOSED DUE TO COMPUTER PROBLEMS*. That's when I realized that all problems will be blamed on the network."

Outlook: Cloudy

This communications company uses cloud technology a lot and wants this pilot fish to make sure everything is in place up there. Just one catch: "I

was told in no uncertain terms that the only way we could do this was by querying the assets the way users would — using HTTP requests," fish groans. Management won't budge, so he writes a script to validate the cloud resources one by one, and it works. But with petabytes of files up there, it's taking forever. Word comes down from management: Don't validate the data; just make sure the files are there. Fish complies, and for a week

the script is very fast — but then the cloud provider calls. "Turns out that my repeated hammering of the servers was causing so much server traffic that it was being interpreted as a denial-of-service attack," fish says. "They were going to block us for the sake of their servers."

Looks Like They All Had The Same Idea

Investment firm hires a contractor to back up the firm's PCs, swap in new ones and restore the data — all overnight. "The team set up the new PCs in a conference room to ensure they were operational," says the pilot fish tapped to lead

the effort. At the end of the day, his team backs up the data from the old PCs, swaps in the new machines and then tries to restore data from the network — with a 100% failure rate. "The firm's IT rep called her boss, who made inquiries. It seems that at the same time we were replacing the old PCs with new ones, the server techs decided to replace the old servers with new servers, and the network was offline. The team — made up of mostly college IT majors — had to leave to study for exams or rest for the upcoming day of studies, leaving only the company IT rep and me to pull all the new hardware and replace it with the legacy PCs. By the time I was off the clock, I'd been there 21 hours."

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OPINION

PAUL GLEN

Business people don't trust us, and we don't trust them. It sounds kind of hopeless, but it doesn't have to be.

Paul Glen, CEO of Leading Geeks, is devoted to clarifying the murky world of human emotion for people who gravitate toward concrete thinking. His newest book is *8 Steps to Restoring Client Trust: A Professional's Guide to Managing Client Conflict*. You can contact him at info@leadinggeeks.com.

A Cycle of Mistrust

WE IN IT LIKE TO COMPLAIN that we don't get the respect, engagement and trust that we deserve. There's no shortage of outrage in IT departments about the low regard we are accorded by our business partners. They hire us and pay us good salaries,

presumably because they consider us the experts on technology and its use in business. But they frequently exclude us from strategic conversations, make decisions without consulting us and ignore our advice. In response, we feel disrespected and untrusted.

When I ask nontechnical business people how they feel about us, they use words like "condescending," "confusing," "defensive," "evasive," "legalistic" and "excessively detailed." They recall bad experiences that have led them to be skeptical of anything that IT people say. They have gone through project failures, and at times they have been treated poorly and felt bad about it. Fair or not, you are emblematic of those experiences even if you had nothing to do with them.

But though they rarely mention it, they have one more reason to mistrust us: We don't trust them much either — and they know it. We're not known for our acting skills.

Our lack of trust arises from the many negative perceptions we have of business people. When I ask technical people how they feel about working with "the business," they use words like "ignorant," "unrealistic," "aggressive" and "unappreciative." They say business people don't know what they want and constantly change their minds. We can recall our own bad experiences that have led us to be skeptical of anything that business people say. We have seen project sponsors shirk responsibility and shift blame, and just like the business people, we have at times been treated poorly and felt bad about it. And we make generalizations about business people based on those experiences.

It is very hard to trust someone who doesn't trust you. And since this feeling exists on both

sides, a vicious cycle kicks in: They don't trust us, in part because we don't trust them, and we don't trust them, in part because they don't trust us.

It sounds kind of hopeless, but it doesn't have to be. Cycles can be broken with a little self-awareness and honesty. You just need to do two things:

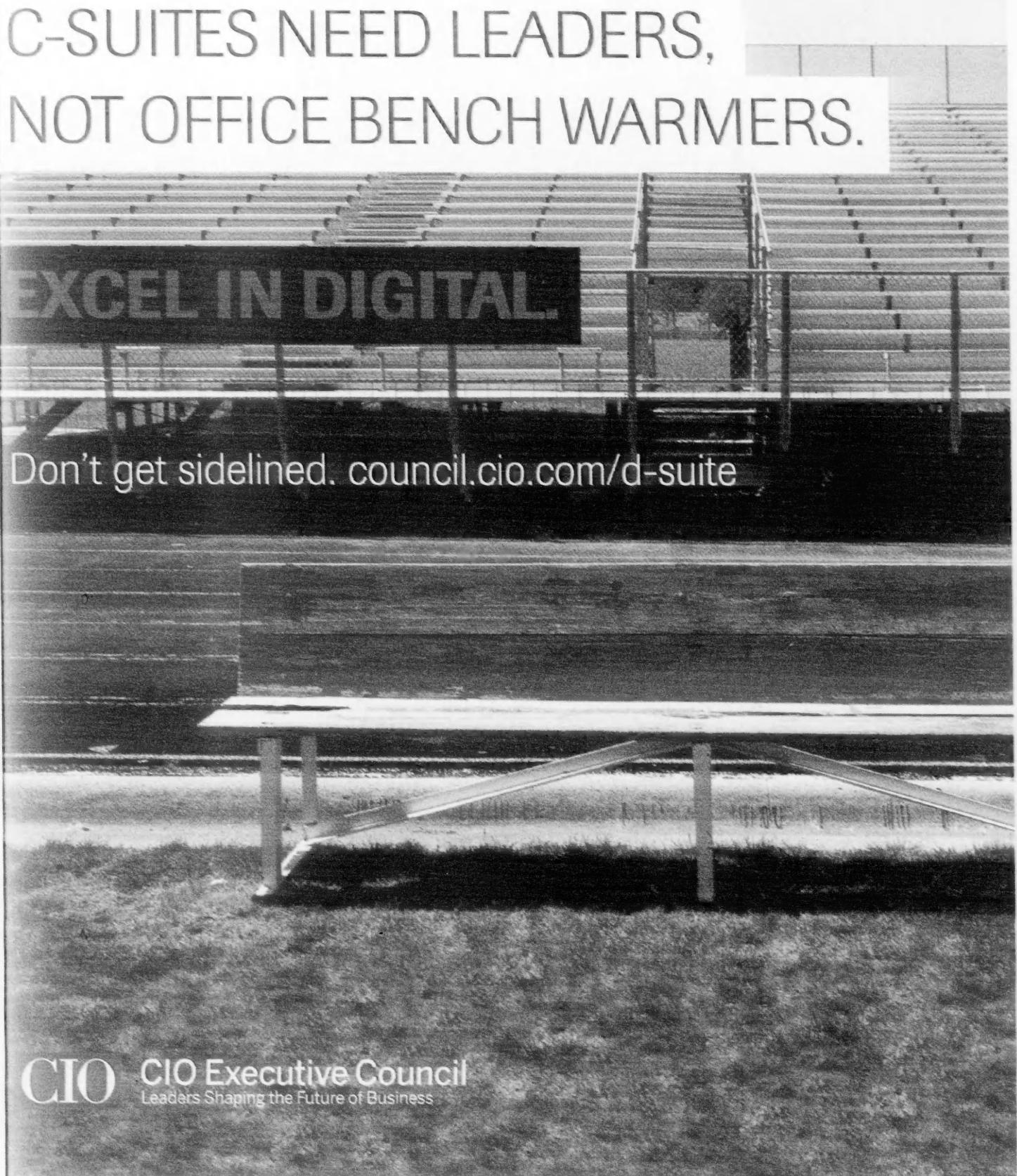
Recognize your negative assumptions. If your sponsors changed requirements midway through the implementation on your last five projects, it's natural to assume that it's likely to happen again. Because you're a techie, and therefore good at solving the problems you recognize, you might incorporate something in your project process to mitigate the risk of requirements changes, such as demanding approval signatures on the requirements documents and imposing penalties for subsequent changes.

But that is likely to lead to a problem you might not recognize. Your new stakeholders don't know the history and just think you are naturally mistrustful, defensive or overly rigid and legalistic. And they feel mistrusted.

Share your feelings and concerns. Instead of making rules based on assumptions, you'd be better off telling new stakeholders that you feel concerned because of past experiences. Ask them to help alleviate your reasonable apprehensions. When you share your feelings, you demonstrate trust rather than mistrust. And in turn, they may expose their fears and concerns based on past experiences and give you a chance to help them.

What's the worst that could happen? If they don't want to participate in that discussion, then you have good reasons to not trust them and you're right back where you started. So you've got everything to gain and rather little to lose. *

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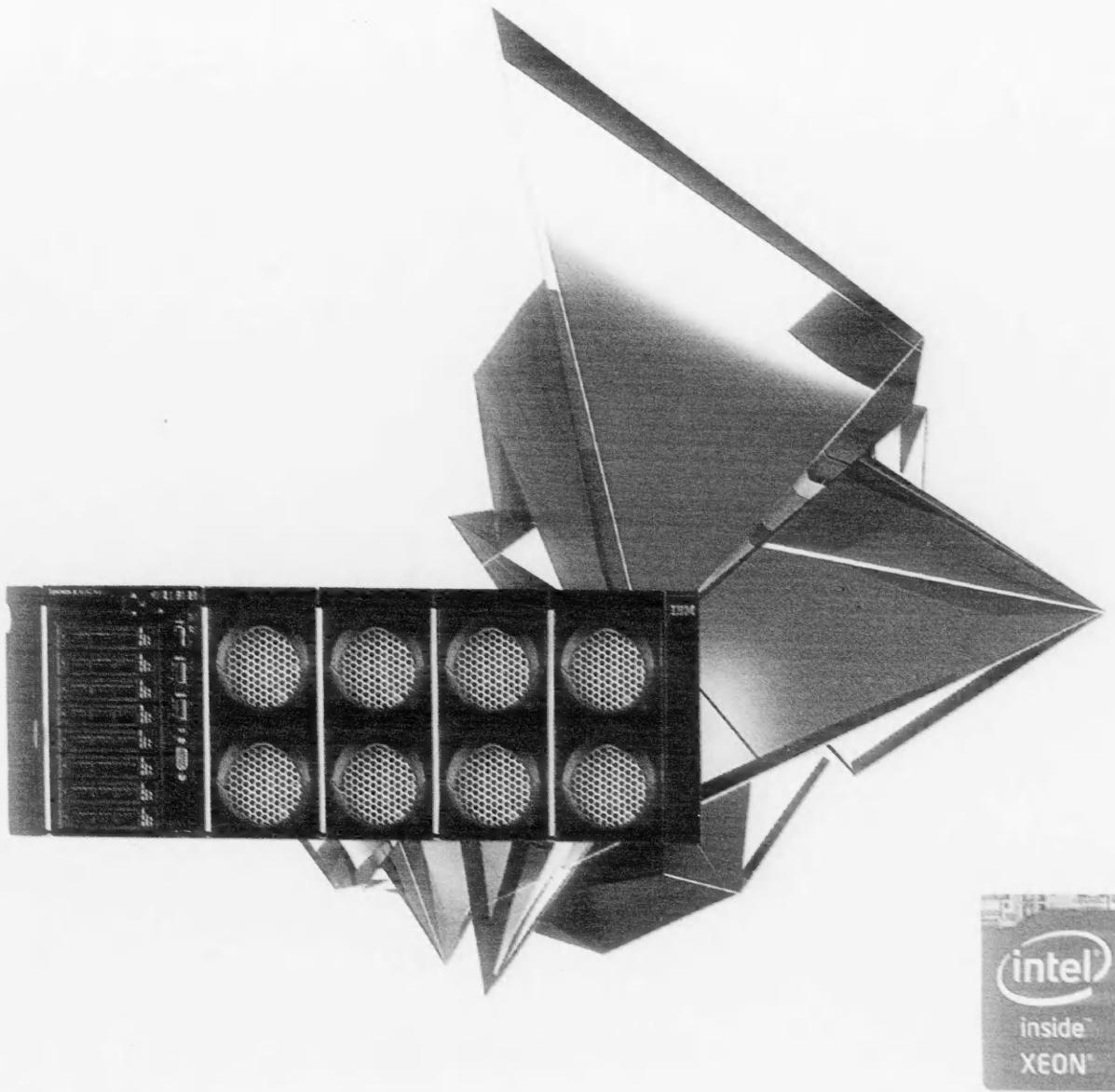
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